

Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A hierarchical traffic management system comprising at least one traffic management node comprising:

a classifier operable to identify and classify incoming traffic streams; and

a queuing system comprising a plurality of queues and operable to apply scheduling policies to said traffic streams, said plurality of queues of the queuing system each comprising:

enqueue attributes configured to control a depth of the queue; and

dequeue attributes configured to control scheduling of the queue, said dequeue attributes comprising minimum bandwidth, maximum bandwidth, excess bandwidth, and priority, wherein each of said plurality of queues has one or more of said dequeue attributes defined;

wherein said pluralities of queues define a queue hierarchy, each layer of said queue hierarchy configured to support one or more priority queues and associated with a class, logical interface, or physical interface, and wherein only one queue within a branch of said queue hierarchy is a priority queue.

Claim 2 (original): The system of claim 1 wherein the packet scheduling system comprises at least three layers of hierarchy.

Claim 3 (original): The system of claim 1 wherein at least a portion of said plurality of queues have said minimum bandwidth attribute defined.

Claim 4 (original): The system claim 3 wherein at least a portion of said plurality of queues have said excess bandwidth attribute defined.

Claim 5 (original): The system of claim 1 wherein at least a portion of said plurality of queues have said maximum bandwidth attribute defined.

Claim 6 (original): The system of claim 1 wherein the attributes not defined at each of said plurality of queues have a default value.

Claim 7 (original): The system of claim 1 wherein each of said dequeue attributes are defined.

Claim 8 (original): The system of claim 1 wherein each of said plurality of queues set as a priority queue sends traffic ahead of other queues sharing a parent node.

Claim 9 (original): The system of claim 1 wherein each of said plurality of queues having a defined priority attribute have defined a level of priority.

Claim 10 (original): The system of claim 1 wherein priority nodes are configured as conditional or unconditional priority nodes.

Claim 11 (original): The system of claim 1 wherein each of said plurality of queues is configured to allow for an oversubscription mode in which minimum rates are oversubscribed.

Claim 12 (original): The system of claim 1 wherein the traffic management node further comprises a pre-queuing operator configured to operate on at least some of said incoming traffic streams before the streams enter the queuing system.

Claim 13 (original): The system of claim 1 wherein the traffic management node further comprises a post-queuing operator configured to operate on at least some of said incoming traffic streams after the streams pass through the queuing system.

Claim 14 (original): The system of claim 13 wherein the post-queuing operator is configured to compress packets.

Claim 15 (original): The system of claim 1 wherein each of said plurality of queues comprises a minimum-rate propagation attribute.

Claim 16 (original): The system of claim 1 wherein each of said plurality of queues comprises a priority propagation attribute.

Claim 17 (original): The system of claim 1 wherein the traffic management nodes operate according to a specified behavioral model and a plurality of components within a network system comprise one or more of the traffic management nodes.

Claim 18 (original): The system of claim 17 wherein a common configuration language is provided for user interface with the behavioral model.

Claim 19 (original): The system of claim 1 wherein the depth of a queue is controlled by a specified maximum queue depth.

Claim 20 (original): The system of claim 1 wherein the depth of a queue is controlled by specification of a Random Early Detection profile.

Claim 21 (currently amended): A method for hierarchical traffic management at a network device having a queuing system comprising a plurality of layers of hierarchy, each layer of the hierarchy configured for supporting one or more priority nodes and associated with a class, logical interface, or physical interface, one or more nodes having a guaranteed minimum rate, one or more nodes designated for receiving excess bandwidth, and one or more nodes having a defined maximum rate, the method comprising:

classifying incoming traffic streams; and

applying scheduling policies to said traffic streams at one or more queues, said scheduling policies comprising minimum bandwidth, maximum bandwidth, excess bandwidth, and priority, wherein traffic up to a specified bandwidth is defined as priority traffic;

wherein only one node within a branch of the hierarchy is a priority queue.

Claim 22 (original): The method of claim 21 wherein said one or more of the scheduling policies at said one or more of the queues have default values applied.

Claim 23 (original): The method of claim 21 wherein said scheduling policies further comprise priority propagation which specifies whether or not priority service at a queue is propagated through a hierarchy of the queue.

Claim 24 (original): The method of claim 23 wherein a burst tolerance parameter is associated with a stream enabled with priority propagation.

Claim 25 (original): The method of claim 24 wherein the burst tolerance parameter is provided for each layer of hierarchy through which priority behavior propagates.

Claim 26 (currently amended): The method of claim 24 wherein the burst tolerance parameter indicates how much the stream ~~may~~ is permitted to burst beyond a rate constraint of an ancestral node before the stream becomes constrained by the rate.

Claim 27 (original): The method of claim 21 wherein said scheduling policies further comprise minimum rate propagation which specifies whether or not a minimum rate at a queue is propagated through a hierarchy of the queue.

Claim 28 (original): The method of claim 21 further comprising enabling an oversubscription mode in which oversubscribed streams are reduced in proportion to a specified oversubscription minimum rate.

Claim 29 (currently amended): A computer-readable medium storing computer-executable instructions ~~program product method~~ for hierarchical traffic management at a network device having a queuing system comprising a plurality of layers of hierarchy, each layer of the hierarchy configured for supporting one or more priority nodes and associated with a class, logical interface, or physical interface, one or more nodes having a guaranteed minimum rate, one or more nodes designated for receiving excess

bandwidth, and one or more nodes having a defined maximum rate, the instructions
~~method~~ comprising:

code that classifies incoming traffic streams; and

code that applies scheduling policies to said traffic streams at one or more
queues, said scheduling policies comprising minimum bandwidth, maximum
bandwidth, excess bandwidth, and priority, wherein traffic up to a specified bandwidth
is defined as priority traffic; ~~and~~

~~a computer-readable storage medium for storing said codes~~

wherein only one node within a branch of the hierarchy is a priority queue.

Claim 30 (currently amended): A system for hierarchical traffic management at
a network device having a queuing system comprising a plurality of layers of hierarchy,
each layer of the hierarchy configured for supporting one or more priority nodes and
associated with a class, logical interface, or physical interface, one or more nodes
having a guaranteed minimum rate, one or more nodes designated for receiving excess
bandwidth, and one or more nodes having a defined maximum rate, the method
comprising:

means for classifying incoming traffic streams; and

means for applying scheduling policies to said traffic streams at one or more
queues, said scheduling policies comprising minimum bandwidth, maximum
bandwidth, excess bandwidth, and priority, wherein traffic up to a specified bandwidth
is defined as priority traffic;

wherein only one node within a branch of the hierarchy is a priority queue.